

Comments – Rural Health Care Reform

RESPONSE TO THE WIRELINE COMPETITION BUREAU'S REQUEST FOR COMMENT ON ISSUES IN THE RURAL HEALTH CARE REFORM PROCEEDING

DA 12-1166

Release Date: July 19, 2012

WC Docket No. 02-60

Telecommunications Access Policy Division, Wireline Competition Bureau:

Chin Yoo, Chin.Yoo@fcc.gov

Charles Tyler: Charles.Tyler@fcc.gov

Kim Lamb

Executive Director

Oregon Health Network

klamb@oregonhealthnet.org

503.344.3742

Kim Klupenger

Chief Operations Office

Oregon Health Network

kklupenger@oregonhealthnet.org

503.344.3745

Peter Trnavskis

Network Infrastructure Manager

Oregon Health Network

ptrnavskis@oregonhealthnet.org

503.344.3757

I. CONSORTIA

6.

a. Consortium application process: We seek comment on specific procedures for the application process for consortia in the proposed Broadband Services Program and ask commenters to focus on how to streamline the application process while protecting against waste, fraud and abuse. What specific information should the Commission require from the consortium leader regarding each consortium member on the application forms? Should letters of authorization (LOAs) from participating members of the consortium be required? If so, should LOAs be submitted at the request-for-funding commitment stage (with the filing of the Form 466-A), rather than at the request-for-services stage (with the filing of the Form 465), as is now the case under the Pilot Program? Submitting the LOAs later in the process, with the Form 466-A, would appear to be more administratively efficient for the consortium, because the consortium could wait until it had completed competitive bidding and knew the pricing before soliciting the LOAs. Before they know the pricing, health care providers are likely to be less certain about whether they will want to participate. This approach also would be administratively simpler for USAC, as USAC would only have to confirm eligibility for that smaller group of HCPs that already know the pricing and are therefore more sure that they want to participate. We also seek comment on the alternative of requiring HCP LOAs to be submitted at the earlier (Form 465) stage, as in the Pilot Program. Should the Commission require consortium applicants to provide details in the consortium's request for services (the Form 465) regarding the services to be purchased, such as the desired bandwidth, sites to be served, and general type of service, as is currently required in the Pilot Program? Should the Commission require the lead entity and selected vendor to certify that the support provided will be used only for eligible purposes, as it does in the Pilot Program in connection with Form 466-A? Should the Commission require applicants to submit a "declaration of assistance," as is required with the Form 465 in the Pilot Program? We encourage commenters to draw on their experience with the Pilot and Primary programs in supporting any recommendations for streamlined application procedures.

Under the Pilot Program, the intent and purpose of the LOA was to establish the Consortium/Lead applicant name and the HCP legal name, address, and primary contact. This information was then used by USAC to identify and determine the eligibility of HCPs. If the purpose of the LOA is to remain the same—consortium identification, HCP identification and eligibility verification—then we propose the LOA, or a similar document, be completed and submitted with the Form 465. The reason for this is to firmly establish eligibility, site name, and consortium filer at the beginning of the process. If the LOA is submitted with the 466-A, there may be HCPs that have engaged with one or more Consortium/Lead filers, inadvertently creating additional administrative work for USAC and the Consortium. We agree with the current Form 465 requirement to include requested bandwidth, sites to be served, and type of service. We agree with requiring the HCP to provide to the Consortium/Lead a declaration of assistance.

We suggest the FCC consider removing the requirement that HCPs certify that the connection is used exclusively for “eligible purposes.” Eligibility of the connection should be based solely on the eligibility of the HCP facility itself. In our experience, the “eligible purposes” limitation encourages under-utilization of the supported connection and over-building as HCPs secure additional connections for “ineligible” traffic to flow across. It also creates barriers to health care delivery, as the complexity of peering and directing IT traffic that is considered “eligible” and “ineligible” within a small, rural health care practice is too significant to overcome. Therefore, the requirement to ensure “*eligible*” traffic only is counter-productive and leads to under-utilized connections. We encourage and support the removal of all eligible use barriers as health care delivery is problematic enough without enforcing (or “the creation of”) technically complex barriers.

b. Post-award reporting requirements: What is the least burdensome way to collect information necessary to evaluate compliance with the statute and other relevant regulations, and to monitor how funding is being used? Should the Commission require consortium applicants to submit Quarterly Reports, as in the Pilot Program?¹⁴ Would the same information that is required for single HCP applicants be required for each HCP in a consortium application, or should the Commission permit consortium applicants to submit a reduced amount of information for each HCP, as it did in the Pilot Program? We encourage commenters to draw on their experience with the Pilot and Primary Program in supporting any recommendations for streamlined reporting procedures.

Information collection is vital to demonstrating use and value of the network and FCC/matching funding investments. The least burdensome manner of collecting this information (with the maximum reporting-out capability) is to create a uniform reporting tool with drop-downs/descriptions of use that allow USAC and the FCC to more easily report on majority trends and uses of the network and funding as a whole. Pilot projects need to understand and hear what is being done outside of their own project, as it leads to cross-collaboration and network connections that serve both in technical efficiency and in patient care. We strongly encourage the information to focus on telehealth/telemedicine use, including types of programs and uses, solutions used, patients/populations served, and types of facilities and practices that are using telemedicine/telehealth. This information is not only vital in demonstrating broadband investments by the FCC, but it is key for reporting to CMS, ATA, AHA, and JCO (Joint Commission of Hospital Accreditation Organization), amongst others. Aligning reporting information that serves multiple purposes creates both reduced administration and overhead and tells a complete “story” of health care needs and uses across the country. Logistically, a shared medium of data collection would again lend to ease of use and data manipulation to produce desired outcomes. Media such as Microsoft ExcelTM or an online form (which can then be converted to Excel) are low-cost and mainstream, and can produce text, statistical, and graph information and reports.

c. Site and service substitution. The Pilot Program permits site and service substitutions within a project in certain specified circumstances, in order to provide some amount of flexibility to project participants. Under the Pilot Program, a site or service substitution may be approved if (i) the substitution is determined to be provided for in the contract, be within the change clause, or constitute a minor modification, (ii) the site is an eligible health care provider or the service is an eligible service under the Pilot Program, (iii) the substitution does not violate any contract provision or state or local procurement laws, and (iv) the requested change is within the scope of the controlling FCC Form 465, including any applicable Request for Proposal.¹⁵ Should the Commission adopt a similar policy for consortia that participate in the Broadband Services Program, if adopted? Would any modifications to that policy be warranted for the Broadband Services Program?

We appreciate and applaud the FCC for supporting the current flexible site and service substitution policies and processes. Pilot projects have the flexibility to continue supported broadband costs for HCPs when/if they need to move facilities (which is fairly common), have an address change (for example: when a street is renamed or renumbered), or when an initially forecasted bandwidth volume is not sufficient to support current need. We do not want to make the decision for a site or service substitution TOO easy, as this may create unwanted administrative burdens. We support translating to the Broadband Services Program the same rules as they apply today in the Pilot Program.

II. INCLUSION OF URBAN SITES IN CONSORTIA

8.

a. Proportion of urban or rural sites in consortia. The 2007 Pilot Program Selection Order allowed urban HCPs to receive support under the Pilot Program as long as they were part of networks that had more than a de minimis number of rural HCPs on the network. If the Commission were to provide support for broadband services to urban HCPs that are members of consortia that serve rural areas, should it adopt specific rules to ensure that the major benefit of the program flows to rural HCPs and/or to rural patients? For example, should the Commission require that more than a de minimis number of rural HCPs be included in such consortia, as in the Pilot program, and if so, what specific metrics should be used to determine whether a sufficient number of rural HCPs are participating in the consortia?²² For instance, should the Commission specify a maximum percentage of urban sites within a consortium? USAC states that urban sites make up approximately 35 percent of all HCP Pilot Program sites that received funding commitments as of January 2012.²³ Should the Commission adopt this or a different percentage as an upper limit on the proportion of urban HCP sites within the rural health care program overall or within a consortium?

Rural areas have multiple challenges. One significant challenge has been obtaining reliable and secure broadband at an affordable rate. The Pilot Program, taken as a whole, addressed this issue effectively, and OHN is not aware of any information suggesting dramatic changes are needed for the Broadband Services Program.

In Oregon, 80% of the state is designated as rural, and 20% of our population lives in a rurally designated area. At OHN, 67% of our current health care provider/educator sites are rural, and 34% are urban. The number of targeted health care providers/educators not currently part of OHN who can benefit from a subsidy and connection to OHN is 473. These targeted providers are non-profit/for-profit hospitals, clinics, single-physician offices, skilled nursing, and radiology centers. All providers—regardless of RHC eligibility—need to be on a shared, high-quality, monitored network platform that has minimum bandwidth requirements in order to ensure no barriers to patient data, image transfers,, health care administration, and education. Having a rule requiring a minimum or maximum number of rural OR urban sites within the network creates barriers to achieving the end goals of increasing access to advanced services for health care providers.¹ OHN supports continuing the rule that originated with the Pilot Program (requiring a non-*de minimis* number of rural participants). Based on our experience, health care need is driving network use and adoption, the connection between rural and urban, and uniform application of best services and practices.

OHN also urges the FCC to *align* its definition of urban and rural with that used by CMS (Center for Medicare and Medicaid Services). From the position of the health care providers, being held under varying definitions of rural/urban from federal policy makers creates confusion and administrative waste. For example, a clinic that is designated by CMS to be a *rural* clinic may be designated *urban* under the FCC, and, therefore, may not be eligible for the very support it sorely needs in order to achieve CMS requirements of obtaining electronic medical records and meaningful use.

OHN supports rules that will encourage and support consortium networks, inclusive of Network Operations Center(s), with a mix of urban and rural non-profit and for-profit eligible providers, with the current non-*de minimus* standard for rural participation used within the Pilot Program. OHN also supports reporting and “stories of use” that highlight positive patient outcomes resulting from urban and rural telemedicine/telehealth programs that exist because of the creation and continued use of health care networks.

b. Limiting percentage of funding to urban sites: In the alternative, should the Commission specify a maximum amount of funding that can be provided to urban sites within a consortium? USAC estimates that about 35 percent of committed funds have gone to urban HCPs in the Pilot Program (while noting that this figure probably overstates the true urban share). Given that the Commission has sought comment on how to transition Pilot Program participants into a reformed program, would adopting a requirement that urban sites receive no greater than 35 percent of total funds per funding year be a workable and appropriate restriction? How would the existence of such limits on urban site funding or inclusion of urban sites affect the consortium planning process and the development and growth of consortia over time?

¹ See 47 U.S.C. § 254(h)(2) (requiring the Commission to “establish competitively neutral rules . . . to enhance . . . access to advanced telecommunications and information services for all public and nonprofit . . . health care providers . . .”) (emphasis added).

Based upon the success of the Pilot Program, it is our firm recommendation that there be no difference in reimbursement rates based upon the urban or rural status of the HCP. Based upon input from our network participants, limiting or reducing subsidy rates of less than or equal to 35% of total funds in a funding year for urban sites would create significant operational restrictions and burdens for the consortium project and produce barriers to the HCPs that would result in under-utilization of program benefits. In addition, the reality of administering contracts that are based upon different rates and percentages would be administratively complex and place further undue burden onto the project. Below is an example:

Provider A is a rural, critical access hospital (25 beds or fewer) that is 100 miles from an urban critical care hospital. Due to demographic and clinical needs, Provider A needs to implement a telecardiology telemedicine program with Provider B, an urban hospital with a cardiology team. Both hospitals are members of OHN, with Provider A having a 100 Mbps connection at a cost of \$24,000 (\$20,400 in RHC support under the Pilot Program) annually. Provider B, as a larger urban hospital system, has a 1 Gbps connection at a cost of \$48,000 (\$40,800 in RHC support under the Pilot Program). Requiring the urban hospital to pay 100% of the cost of its connection will create substantial barriers to connecting and providing services to rural providers. OHN's value proposition is to encourage adoption of the network to support health care through administrative efficiencies and the use of telehealth and telemedicine to elevate patient care. The point is that urban anchor tenant connections are a primary benefit to the rural health care providers. FCC policies that recognize the linkage between urban and rural will sustain the momentum that has been achieved through the current investments. We are just starting to realize the accomplishments that have been made thus far, and we advocate the continuance of this positive and results-rich path.

- c. *Impact on Fund: To the extent commenters support a particular approach to limiting the participation of urban sites in consortia serving rural areas, they also should estimate the likely impact on the RHC funding mechanism if the Commission were to adopt their recommended approach. Commenters should provide data to support their estimates. We welcome detailed analysis on the impact on the Fund of any limits (or lack thereof) on urban HCP participation that the Commission may adopt or that parties may propose.*

Because of the FCC's investment in OHN, the state of Oregon has seen increased competition, increased infrastructure deployment by local providers, and increased broadband availability in rural areas. Both non-recurring and monthly recurring rates have trended downward over the last three (3) years of OHN's network implementation. This continued decline in rates is already reducing OHN's drawdown of its Pilot award, thereby allowing more sites to participate at lower rates. This, in turn, elevates both the impact of the award and continues the spread of infrastructure investment.

Creating limitations based upon urban or rural designation will only create barriers and slower adoption of use rather than creating and fostering growth in desired areas. The complexity of building networks cannot be underestimated. Health care providers are extremely cautious (and often over-cautious) in their use of technology to provide patient care. They are, in effect, their own "limiters." For the FCC to create additional limits or barriers on network creation risks stalling a very slow and deliberative adoption

process that has already undergone extensive scrutiny from the physician(s), IT, legal, financial, and administrative executives at the HCPs.

- d. *Impact on network design: USAC notes that in the hub-and-spoke configuration common to Pilot projects, where a centralized or primary HCP serves as the main provider and is surrounded by several subsidiary providers, the hub is often an urban HCP. What impact would including (or excluding) urban sites from funding under the Broadband Services Program have on network design and efficiency, from both a cost perspective and a technological perspective? Would it be possible to limit funding for urban sites to recurring and non-recurring charges associated with equipment necessary to create hubs at urban HCP sites? Would such a limitation unnecessarily restrict participation by urban HCPs or otherwise limit the effectiveness of the program?*

The inclusion or exclusion of urban sites would have a fundamental impact on network design and efficiency. Urban population centers, and the HCPs that reside in those areas, are typically the hub of all technical activity on a HCP's network. These urban hub sites typically house all PACs and health information systems, as well as the clinical experts who play a central role in patient care for both rural and urban HCPs. From a technological prospective, these hub locations are where all of the rural spoke locations need to be able to connect. The network connections from the urban hubs to the rural spokes are critical to patient care, and with the transmission of images through PACS (and now electronic health records), these connections require even more bandwidth and quality than before.

The benefits of including urban sites in these networks are substantial. The inclusion of these urban hubs allows HCPs to lower the cost of health care delivery and improve security by connecting the rural sites to the hub site via OSI Layer 2 connections. This removes all public IP space from those connections, allows for higher quality over a dedicated connection at a lower cost, and is covered from end-to-end by a common vendor service level agreement (SLA). Since the connection is secure, no traffic ever touches the public Internet, and therefore, the smaller rural sites can reduce costs by not having to manage firewalls at the spoke locations. All public internet traffic is managed by the hub location, which, in turn, reduces network management and security costs by reducing all the points of ingress and egress to the HCP's internal WAN to a single point. This is also in keeping with security industry best practices and standards.

- e. *Grandfathering of urban sites already participating in Pilot projects: If the Commission chooses not to provide funding to urban sites under the Broadband Services Program, or sets limits on such funding as discussed in paragraph (b) above, should the Commission nevertheless provide funding to urban sites that have received funding under existing Pilot projects? Should the Commission limit the funding to existing Pilot project urban sites only for so long as the urban site is a member of a consortium with rural HCPs?*

If the FCC decides not to allow eligibility for new urban locations, then, yes, all current Pilot Program members within consortium networks that include urban locations should be grandfathered in under the Broadband Services Program. The primary reason for this is the sheer amount of time and expense that it takes to establish

telemedicine/telehealth programs due to patient/program/provider/legal/funding/reimbursement/technology issues to be established and worked out. The three years that OHN has been actively implementing the Pilot Program is not enough. We are just getting started with the deployment of network use and the adoption of telemedicine and electronic health records. A disruption of the momentum and flow of use and adoption would be the epitome of a waste of funding, to date. In addition, limiting funding would create further hurdles that our health care providers don't need. It is already difficult to address, and adhere to, the multitude of policies and program requirements. To create barriers and limits to the network infrastructure that supports ALL of said programs would be counter-productive to the original purpose of the FCC's broadband infrastructure support programs.

The next generation of integrated and coordinated health care delivery requires the systematic design, deployment, and ongoing support of a very sophisticated "network of networks" model. As a critical first phase of the deployment of this new network model, the FCC has thankfully already invested in the costly startup funding and infrastructure foundation required to support this new model of health care delivery through the Pilot Program. Phase 2 for the FCC should be to continue the ongoing support and expansion of the Pilot Program networks so that the benefits of their first phase investments can be fully realized. Beyond general support, it is our belief that these RHCPP networks should be prioritized (or leveraged to their maximum ability) throughout the FCC BSP programs, serving as the technical, best practice, and programmatic "hubs" of the new nationwide health care network infrastructure community.

III. ELIGIBLE SERVICES AND EQUIPMENT

10.

- a. *Point-to-point connectivity: Some commenters have raised concerns regarding the term "point-to-point" in the NPRM. We seek to further develop the record on the types of connectivity that should be eligible for support under the proposed Broadband Services Program. Health care networks and other enterprise customers use a wide variety of connectivity solutions which allow a variety of topologies (ring, mesh, hub-and-spoke, line, etc.) and technologies (MetroE, MPLS, Virtual Private Network, etc.) to meet their requirements. These solutions are "point-to-point" in the sense that they allow a facility to send or receive data to or from another facility, but they also provide additional capabilities -- for example, the ability to connect to multiple facilities on the same network, and/or the ability to connect to another facility without needing a physically "dedicated" circuit to that facility. Should the definition of services to be funded under the Broadband Services Program omit the phrase "point-to-point"? We seek comment on whether the rules for the Broadband Services Program should enumerate a wide range of connectivity solutions such as those listed above, or should be more general, in recognition of the likely change and evolution of services utilized by health care providers that will occur over time. Should there be any distinction in the types of services that would be funded?*

The wide variety of network topologies and technologies that are available continue to evolve and change over time, as does their use. In the over 230 facilities that OHN has

connected, we've utilized a wide variety of technologies; we continue to explore newer and more cost-effective methodologies for connecting our health care facilities. Given the pace at which technology and technological needs continue to change and evolve, it is simply not possible to accurately estimate what technology might be needed (or available) in the next 3-5 years. Each HCP represents a unique challenge, and the technology best suited to deliver a high-quality network connection to the facility is largely dependent on the location of the facility, the network topology of its health system, and its needs. Any policy that limits the tools available to the projects and their network engineers will only serve to increase the cost of providing services or decrease the quality and use of those services. OHN advocates that there should be no distinction in the types of broadband services that can be funded, including the critical presence of NOC existence and services. This will increase our ability to match up the right type of technology or service with the individual needs of the HCP, as long as those services serve the ultimate goal of the program.

- b. *Eligible non-recurring costs (NRCs): For the Broadband Services Program, the Commission proposed in the NPRM to provide one-time support for 50 percent of reasonable and customary installation charges for broadband access and to provide support for the cost of leases of lit or dark fiber. The American Telemedicine Association has recommended that the Commission, at a minimum, support the costs of routers and bridges associated with the installation of broadband services to an eligible health care provider, and that the Commission allow such providers to work together to purchase equipment through joint, cooperative bidding procedures in order to allow for more efficient purchasing of network equipment costs.³⁶ USAC notes that the availability of funding for certain types of equipment in the Pilot Program ("servers, routers, firewalls, and switches") facilitates the ability of health care providers to upgrade circuits or create private networks.³⁷ We seek more focused comment on whether the NRCs eligible to receive support under the Broadband Services Program should include equipment to enable the formation of networks among consortium members, similar to the Pilot Program.³*

Support at 50% for installation charges would create the need for consortium projects or sites to seek funding for the remaining 50%, which would often stall/delay/stop critical installation of networks. In addition, limits on installation charges may cause some telecommunications vendors to increase their MRCs to recover those costs over the contract period.

The support for network equipment is extremely important to the overall health and security of a health care network. HCPs must meet stringent HIPAA and security standards. The cost of network infrastructure scales with the performance requirements that the equipment must meet. For many HCPs, the availability of a new, high-speed, broadband connection requires that they also refresh their internal network infrastructure to support the performance and use of the new connection. Therefore, the purchase cost of new network equipment is often needed to support higher bandwidths and to ensure that the HCP has the infrastructure necessary to meet meaningful use of their subsidized connections. Also, the majority of health care providers do not know that this equipment is required; to have them pay for the

majority of the equipment would again create delays or stops in network connections. The large system hospitals have staff that has the expertise to forecast the need for said equipment. Small/rural hospitals and clinics often do not. Therefore, if there are barriers to installation, the real work of adopting and using a high quality, monitored network creates delays and lack of uniformity in health care use and access across patient populations.

Consortium purchasing is always a great way to reduce costs. Consortium purchasing will allow rural HCPs and smaller locations to benefit from the same pricing available to large urban facilities and hospital systems.

- c. *Ineligible sites and treatment of shared services/costs. Section 254(h)(3) of the Act and Section 54.671(a) of the Commission's rules restrict the resale of any services purchased pursuant to the rural health care support mechanism.⁴⁵ In the Pilot Program, the Commission determined that, under this resale restriction, a selected participant could not sell network capacity that was supported by Pilot Program funding, but could share excess network capacity with an ineligible entity as long as the ineligible entity paid its "fair share" of network costs attributable to the portion of the network capacity used.⁴⁶*

In the Pilot Program, projects have allocated the cost of shared services and equipment among members (both eligible and ineligible HCPs) by taking into account a variety of healthcare-specific factors. We note that in the Pilot Program, projects submit information about sharing of services and costs among members with their requests for funding commitments, and that USAC reviews and approves those submissions.

We seek comment on whether there is a need to adopt specific rules in the Broadband Services Program (if adopted), regarding the participation of ineligible HCP sites (e.g., for-profit rural health clinics or, if not included in the Broadband Services Program, urban HCPs) in consortia that receive funding for broadband services provided to eligible members. Even if not funded, there may be other health care and financial reasons why providers that are not funded through the program may wish to enter into cooperative arrangements with other providers that are funded, in order to create local and regional health care networks. By acting together, providers are more likely to receive lower pricing and a wider array of services to meet their health care needs.

Should the Broadband Services Program have a "fair share" requirement comparable to the Pilot Program? In particular, should the Commission adopt a specific approach to shared services and costs for consortium applicants, or should the Commission just require that the allocation of the costs of shared services and equipment among consortia members be reasonable? We welcome further comment on whether the procedures utilized by USAC to implement the fair share requirement in the Pilot Program are workable or burdensome, and what measures would best address potential waste, fraud and abuse in a reformed program.

Again, OHN applauds the FCC for reflecting actual "use" and "allocation" examples and needs within our health care community. Our health care providers are, by nature, conservative, and they take rules seriously as they apply to applicable use. That said, restricted eligibility of providers (for example, a for-profit provider that shares the same

building as non-profit/eligible provider) has created administrative complexity and reduced the use of the investment that the FCC has made out to the physical location, out of the sheer fear of the providers.

What OHN would suggest to address this issue is two-fold:

- i. Allow ALL health care providers (i.e. those who can show documentation proving they are a certified health care provider) to use the supported network either through direct contracts or through sub-contracts via the original contracting entity.
- ii. Allow Network Operations Center (NOC) support for all connected health care providers and vendors, regardless of network eligibility, so that the end-to-end quality and usability of the network can be maintained. Continued support for NOCs creates minimum administrative complexity, superior network use, and reduction of barriers. Ineligible health care vendors and providers would need to pay for their connectivity costs but would not need to worry about paying for allocated NOC costs (which, on an incremental basis, are effectively zero). In addition, allocating relative NOC costs based on usage is almost impossible to track.

IV. COMPETITIVE BIDDING PROCESS AND RELATED MATTERS

11.

- a. *Competitive Bidding Process: Building on the experience gained from the Pilot Program, what specific requirements should be in place for competitive bidding in the Broadband Services Program, if adopted? Should the Commission require consortium applicants in the Broadband Services Program to prepare a Request for Proposal (RFP), as applicants in the Pilot Program were required to do? Should the Commission exempt consortia from the RFP requirement if they are applying for less than a specified amount of support (for example, if they are applying for less than \$100,000 in support)? Are there other elements of the competitive bidding process utilized in the Pilot Program that should be applied to the Broadband Services Program, either as is or with changes that the parties suggest to improve the process? Are there any competitive bidding requirements used in the Schools and Libraries Universal Service Support Mechanism*

Competitive bidding nearly always allows for reduced costs to the HCPs; however, it does place a much higher administrative burden on the projects. In the end, it's a bit of a balancing act—we want to ensure we're receiving competitive pricing, but a full Request for Proposals (RFP) process is time-consuming and costly. OHN advocates allowing sites with existing connections (funded either through the RHCPP or standard rural program) who wish to continue with the same service at a service rate that can be supported by the current infrastructure to utilize a Request for Quotes (RFQ) process instead. A traditional RFP is much more detailed than an RFQ because it contains a tremendous amount of information regarding the technical aspects of the solution, as well as specific responses to the multiple

technical and administrative requirements posted in the RFP document. An RFQ, on the other hand, produces quotes and a Service Level Agreement (SLA)—this makes for a much quicker review process. For new installations, an RFP is helpful in that the site and the project obtain more detailed proposals from the vendors, which allows for a more in-depth technical analysis of the proposals. However, when a solution is already in place (as it would be with existing sites receiving subsidy or when a high-cost install isn't likely) it would be much more efficient to allow the use of an RFQ for any ongoing upgrades, changes, or new service. We ask that you allow the projects the flexibility to utilize a variety of different competitive bidding processes (such as the RFQ) so that we can tailor the competitive bidding process to match the challenge and need we are working to solve. This will also assist in reducing the administrative costs associated with the provisioning of services.

V. BROADBAND NEEDS OF RURAL HEALTH CARE PROVIDERS

12.

Telemedicine: What bandwidth is needed for various types of telemedicine applications? In particular, how widespread is the use of teleradiology, and what bandwidth is required? How widespread is the use of videoconferencing in providing telemedicine, and what bandwidth is required? Will broadband needs associated with telemedicine likely change over time? What factors will cause the needs to grow? How important are connections between rural HCPs and urban HCPs?

It is our strong recommendation that the FCC not place any restrictions on either the minimum or maximum bandwidth available to the HCPs. Telehealth is still largely being defined, and, as with many technologies, it continues to evolve. The general trend in the industry has been to reduce the bandwidth needed to perform a high quality video call; however, video only represents one aspect of telehealth. Telehealth also includes the transmission of images, patient records, and a wide variety of other applications. OHN recommends a minimum of 10 Mbps synchronous in order to support the vast majority of telemedical applications. Larger facilities utilizing multiple concurrent technologies and connections can require upwards of 100 Mbps. These bandwidth recommendations allow for sufficient room for background traffic, as well as for telehealth applications. When these recommendations are combined with an appropriate SLA, the connection is usable for 99% of the applications available today, *with room to grow for tomorrow*. Given the ever-evolving telehealth landscape and the lack of any form of “cookie cutter” network configuration that can be applied to the HCPs, any restriction on bandwidth would quickly become outdated and would only serve to reduce the usability of the network.

As mentioned above, there is no definitive answer with regards to the bandwidth needed to support the HCPs. However, the health care industry is trending towards a minimum of 100 Mbps to support health care applications. The current answer to this question is highly dependent on multiple factors, such as the type of compression used

(H.264 vs. H.323) and the quality of the connection with respect to packet loss, jitter, latency, etc. It is also highly dependent on the technology used, the number of concurrent connections, and background traffic. Without having all of those factors accounted for, it is nearly impossible to provide a bandwidth recommendation. For example, if an HCP was sending a large MRI study (with a file size upwards of 750Mb) to a Radiologist across the state, the amount of bandwidth available and the quality of that bandwidth would dictate how quickly that study was transmitted. If the image was transmitted over a 50Mb connection that had high latency or packet loss, the transmission could take twice as long as a 10Mb connection with low latency and close to 0% packet loss. At OHN, we have a strong preference for fiber builds because, in general, the quality of a fiber connection is much higher and less prone to quality degradation from a wide variety of factors than a wireless connection would be. We also ensure that service level agreements (SLAs) that meet our exacting standards for packet loss, jitter, latency, and availability are in place with the service provider. Lastly, and most importantly, our network operations center (NOC) proactively monitors the network to ensure that all our service providers meet their SLAs and that the network is operational 24/7 to meet our HCP's real-time health care delivery needs.

Typical bandwidth requirements by application:

In general (keeping all factors constant), a single high-definition video call (1080p at 30fps) to facilitate a single patient consult would require roughly 1-2 Mbps (+20% overhead) on a full duplex connection using the latest Polycom proprietary H.264 protocol. The same call, using the more common H.323/SIP protocol, would require 2-4 Mbps (+20% overhead). These bandwidths are representative of a single point-to-point call that would support a high-definition video consultation between two physicians. Many telehealth programs have limited these calls to just below HD in order to save bandwidth, and we have seen successful consultations using 768 Kbps-1 Mbps (+20% overhead); however, this is as low as one would be able to go while still allowing for sufficient quality for a medical consultation, where high definition video is not needed.

PACs, files, and image transmissions will generally fill up as much bandwidth as is available, unless throttling is in place. Packet loss and other quality factors will largely determine overall transmission times, as will the resolution of the images being transmitted. Assuming we use a direct DICOM transfer, which is typically used for the highest quality resolutions and greatest flexibility, with an array size of 4096x5120 and an 8-bit image (lowest possible quality), the file size will be roughly 20 Mb; a 32-bit image (generally the highest quality) will take roughly 84 Mb. For the purpose of this example, let us assume a 100 Mb data set total. The bandwidth consumed would equal the bandwidth available (unless throttled by the HCP). Therefore, on a 10 Mbps connection with roughly 50% utilization, this same data set would take roughly 3.6 minutes to transfer (assuming 0% packet loss and roughly 4ms latency introduced by network overhead and compression/decompression). On a typical WAN scenario involving a high quality connection, you would probably see about .03% packet loss and 20-40ms of latency, which would increase this transmission time even further to 4-5 minutes.

The broadband needs associated with telemedicine are changing and evolving at a rapid pace in order to keep up with the industry needs, as well as the continuous advances in technology. The general trend is to reduce the bandwidth required to run the applications, as well as to provide more resiliency to poor line conditions. However, at the same time, many HCPs are seeing an increase in the number of concurrent video calls, in addition to an increase in the number of applications being used to support telehealth. So while the overall trend on a per-application basis continues to decrease, the number of these applications in use continues to increase at a rate disproportionate with the small reductions in bandwidth we see within the individual applications. Therefore, it is safe to assume that bandwidth needs will continue to rise as the country slowly embraces electronic health records, the remote delivery of health care via telemedicine, and the advent of health information exchanges.

Electronic health records. How will the current trend toward adoption and exchange of electronic health records affect bandwidth needs? Congress has directed the Medicare and Medicaid programs to provide incentive payments for HCPs that have adopted electronic health records and have achieved “meaningful use” of those records, which includes some electronic exchange of those health records.⁷¹ Eventually, achieving “meaningful use” is expected to be mandatory for recipients of Medicare and Medicaid payments. What is the impact of “meaningful use” incentive payments and requirements on likely demand for broadband connectivity for rural HCPs? What is the likely impact of participation by rural HCPs in Health Information Exchanges?

It is our strong recommendation that the FCC not place any restrictions on either the minimum or maximum bandwidth available to the HCPs for EHR. Regardless of EHR or any other HIT application, any time you’re adding another application to the network, you will see an increase in bandwidth utilization. How much of an increase depends on the application being used, where the data is stored, and what (if anything) is being transmitted. If you have a true EHR that integrates labs, PACS, clinical, administration, and all the other elements needed for a complete record, then the bandwidth needs are much higher.

All bandwidth requirements listed are for the internal LAN (data for external WAN transmissions is not readily available):

Epic EpicCare Inpatient EMR:	roughly 10-15 Kbps per user
Allscripts Sunrise Clinical Manager:	Minimum of 10 Mbps for users accessing the system, server components should be connected at a minimum of 100 Mbps

b. Other telehealth applications. What are the likely broadband needs for other telehealth applications (e.g., training and technical support for health care purposes and health IT applications)?

Please see the above information in regards to telehealth applications and broadband needs overall. The specifics of this question are too broad to predict. That said, having fewer restrictions on HCPs to use and increase bandwidth, and

having the quality in place necessary to accommodate telehealth applications, is vital to health care policy reform.

d. Service quality requirements. We also seek comment on the needs of rural HCPs for such service quality features as dedicated connections, redundancy, low latency, and lack of jitter. How much will these added levels of quality add to the cost of broadband services for HCPs? Will privacy and security requirements applicable to health care data exchange affect HCP broadband service quality needs?

OHN posed this question to several of our service providers and they unanimously stated that there was no significant increase in MRC as a result of the standard OHN SLA. Where we realized a cost impact was with the *install costs*—several service providers were unable to use the existing infrastructure to support the SLA, and this made it necessary to either strengthen that infrastructure to support the OHN SLA resulting in an increased NRC (non-recurring cost), or made it impossible for them to bid on a project because their network segment could not support the SLA and a build out was too costly.

The real cost associated with maintaining a high-quality SLA revolves around the management of the network and how that quality is guaranteed. Most service providers do not have alarms or alerts set for metrics like jitter, latency, and packet loss, despite the established SLAs. Issues related to these metrics are handled in a reactive manner by the vendor putting a probe in place when a complaint is registered. In order for a site to rely on a network connection for real-time health care delivery, the HCP must be able to trust that the connection will provide a quality level adequate to meet their needs *whenever that need arises*. This requires true proactive monitoring and response that most service providers cannot provide. The other aspect is the expeditious resolution of quality issues among multiple service providers. Typically, when a connectivity issue arises on a connection involving multiple service providers, you need to spend an inordinate amount of time determining on which service provider network segment the issue resides. OHN solved this problem by creating a third-party NOC that proactively monitors all OHN network links 24/7/365; the NOC alerts when an adverse network condition that results in a reduction of the quality of the connection below SLA specs is present. Any time a performance threshold is not met, the OHN NOC will contact the service provider for resolution and troubleshooting—they will also alert the HCP of the issue and its status.

As security requirements increase to keep pace with the rising need to share electronic health records and to support telehealth applications (while at the same time meeting HIPAA requirements), the quality of the circuit—and not just the bandwidth—will play a pivotal role in the usability of the circuit for health care delivery. A typical Secure VPN protocol will add 20-30ms of latency to an OSI Layer 3 circuit. The need to have the vendor SLAs met is vital to ensure the usability of the circuit for the HCP. Since the vast majority of vendors do not provide any proactive monitoring of their circuits, the most viable method for ensuring the usability of the connections is through a dedicated Network Operations Center (NOC) that provides a third-party monitoring capability to find and deal with adverse network conditions in real time and before they have a chance to impact the delivery of patient care. By

providing this monitoring and reporting, we are able to increase the usability of the connection and make it easier for sites to meet meaningful use by ensuring that they have confidence in the circuit's performance and availability.